APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,221	06/19/2003	Namik Hrle	SVL920030011US1	9790

7590 12/16/2005	**EXAMINER**
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ART UNIT	PAPER NUMBER
2162	

DATE MAILED: 12/16/2005

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/600,221	HRLE ET AL.
	Examiner	Art Unit
	Giovanna Colan	2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*19 June 2003*</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>*1-33*</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>*1-33*</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>*06/19/2003*</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   This action is issued in response to applicant filed application on 06/19/03.

2.   Claims 1-33 is pending.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4.   Claim 3, 9, 29, and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "the backup medium" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 9 recites the limitation "the log records" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 29 depends on claim 34, which is not disclosed on this application. Because of recitation of "after backing up the data" in line 2, it is believed claim 29 was intended to depend on claim 27 and has been treated as such for the remainder of this Office action. Appropriate correction is required.

Any claim not specifically addressed, above, is being rejected as incorporating the deficiencies of a claim upon it depends.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

7.   Claim 1 – 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Kawamura et al. (Kawamura hereinafter) (US Patent No. 5,778,388) in view of Mosher,

Jr. et al. (Mosher hereinafter) (US Patent No. 6,785,696 B2).

Regarding Claim 1, Kawamura discloses a database management system

comprising:

a mainline database system that makes modifications to data in the database

management system using a write-ahead logging protocol (Col. 6, lines 36 – 42,

Kawamura); stores data on a first set of storage volumes (Col. 5, lines 38 – 39,

Kawamura) and stores log records on a second set of storage volumes (Col. 5, lines 39

– 41, Kawamura); restores consistency between the log records and the data during a

restart (Col. 3 and 10, lines 56 – 64 and 1 – 2, Kawamura), and while a backup system

lock is held by a backup utility (Col. 9, lines 33 – 34, Kawamura), continues updating

objects except (Col. 9, lines 47 – 50, Kawamura) for suspending actions that change an

external file system catalog (Col. 9, lines 33 – 35, Kawamura[1]), suspending writing

updates of objects that extend across a storage volume boundary (Col. 9, lines 52 – 56,

Kawamura).

Regarding Claim 9, 17, and 26, Kawamura discloses an article of manufacture

comprising computer usable media including at least one computer program recorded

therein that is capable of causing a computer system to perform a method of operating

a database management system comprising the steps of:

modifying data in the database management system using a write-ahead logging

protocol (Col. 6, lines 36 – 42, Kawamura);

restoring consistency between log records and the data during a restart (Col. 3

and 10, lines 56 – 64 and 1 – 2, Kawamura);

storing data on a first set of storage volumes (Col. 5, lines 38 – 39, Kawamura)

and storing log records (Col 5, lines 60 – 63, a log including historical information of

database update operations conducted for transactions, Kawamura) on a second set of

storage volumes (Fig. 2, item 27, Col. 5, lines 60 – 61, a logging part, Kawamura);

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[1] Kawamura discloses that when the buffer is locked any input or output operation will be inhibited for the
external storages. This implies that the input or output operations are actions which can change an
external file system catalog.

continuing to update the data (Col. 9, lines 47 – 50, Kawamura) while the backup

system lock is taken (Col. 9, lines 33 – 34, Kawamura), except for suspending actions

that change an external file system catalog (Col. 9, lines 33 – 35, Kawamura[2]), and

except for suspending writing updates of objects that extend across a storage volume

boundary (Col. 9, lines 52 – 56, Kawamura).

Kawamura also discloses a backup system lock that, when is taken, suspends

transactions (Col. 9, lines 7 – 10, Kawamura). However, Kawamura does not explicitly

disclose freezing a REDO log point in checkpoint information while the backup system

lock is taken (Claim 1, 9, 17, and 26). On the other hand, Mosher discloses a system

and method for backing up data, including a REDO log point in checkpoint information

(Col. 8, lines 66 – 67 and 1 – 3, Mosher). It would have been obvious to one of ordinary

skill in the art at the time the invention was made to modify Kawamura's system and

method to include the freezing transactions, such as, a REDO log point in check point

information, based upon the disclosure of Mosher for the purpose of providing

consistency and stability between re-updates done to a database while a backup lock is

was taken. In addition, based upon Mosher disclosure, one of ordinary skill in the art at

the time the invention was made would have been motivated to do so in order to provide

reliable information to users of a database management system.

Regarding Claim 2, the Kawamura and Mosher combination (hereinafter

"Kawamura/Mosher") discloses a database management system, further comprising a

backup utility that obtains the backup system lock before starting a backup process (Fig.

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[2] Kawamura discloses that when the buffer is locked any input or output operation will be inhibited for the

14, item 408, Col. 11, lines 9 – 10, Kawamura); copies the first set of storage volumes

to a first set of backup volumes (Fig 14, item 409, lines 10 – 12, Kawamura); records

information identifying the first set of backup volumes in a dataset (Col. 6, lines 34 – 38,

the update related to the update is written in the LSN field, Kawamura).

Regarding Claim 3, Kawamura/Mosher discloses a database management

system, wherein the backup utility copies the second set of storage volumes to the

backup medium (Fig. 2 and 21, items 16, and 37 and 2710, lines 64 – 67, Kawamura;

Fig. 2, items 96, 88, and 74a, Col. 4, lines 26 – 27, Mosher); and records backup

volume information for the second set of storage volumes in the dataset (Fig. 21, item

2710, col. 14, lines 67, Kawamura; Fig. 2, items 96, 88, and 70, Col. 4, lines 25 – 26,

Mosher).

Regarding Claim 4, Kawamura/Mosher discloses database management system

further comprising a restore utility that performs a point-in-time recovery (Fig. 8, items

366, Col. 8, line 19, Mosher) using the data from the first set of backup volumes (Col. 8,

lines 19 – 20, Mosher), a user specified point-in-time (Col. 4, lines 14 – 16, Mosher[3]),

and the logs on the second set of storage volumes (Col. 8, lines 21 – 23, header to

identify a particular SIT file, Mosher).

Regarding Claim 5, Kawamura/Mosher discloses a database management

system wherein the restore utility marks a first object as recovery-pending when a log

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external storages. This implies that the input or output operations are actions which can change an
external file system catalog.

[3] Mosher discloses that the system will receive user requests for storing and restoring. In addition Mosher
teaches a system comprising with a Timestamp feature (see Fig. 8, items 366, Col. 8, lines 19) added to
the Extractor. The exactor is an entity that reads data to be stored and/or restored (see Fig 2, items 80,
82, 84, 86).

record identifies the first object as having been updated without log records (Col. 10,

lines 26 – 28 and 56 – 60, Mosher) so that subsequent restoration of the first object can

be made from an image copy (Col. 10, lines 60 – 61, Mosher).

Regarding Claim 6, 14, and 23, Kawamura/Mosher discloses a database

management system wherein the mainline database system writes log records to

identify objects that have been updated without log records (Col. 10, lines 24 – 29,

Mosher) and writes log records to identify objects that have been created, extended

and/or deleted (Col 6 and 10, lines 17 – 23 and 20 – 24, Mosher).

Regarding Claim 7, Kawamura/Mosher discloses a database management

system wherein the mainline database system stores checkpoint information

periodically (Fig. 11, Col. 8, lines 40 – 42, Mosher) and the backup utility records a log

apply starting point corresponding to a last checkpoint information storage point (Col. 8,

lines 43 – 46, Mosher).

Regarding Claim 8, Kawamura/Mosher discloses a database management

system wherein the mainline database system obtains the backup system lock (Col. 9,

lines 33 – 34, Kawamura) before updating objects that change an external file system

catalog (Col. 9, lines 33 – 35, Kawamura[4]) or that extend across a storage volume

boundary (Col. 9, lines 52 – 56, Kawamura).

Regarding Claim 10, Kawamura/Mosher discloses a database management

system further comprising:

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[4] Kawamura discloses that when the buffer is locked any input or output operation will be inhibited for the external storages. This implies that the input or output operations are actions which can change an external file system catalog.

means for obtaining the backup system lock before starting a backup process (Fig. 14, item 408, Col. 11, lines 9 – 10, Kawamura); for copying the first set of storage volumes to a first set of backup volumes (Fig 14, item 409, lines 10 – 12, Kawamura); and for recording information identifying the first set of backup volumes in a recovery control dataset (Col. 6, lines 34 – 38, the update related to the update is written in the LSN field, Kawamura) and in an external file system's control dataset (Col. 5, lines 66 – 67, Kawamura).

Regarding Claim 11, Kawamura/Mosher discloses a database management system further comprising means for copying the second set of storage volumes to a second set of backup volumes (Fig. 2 and 21, items 16, and 37 and 2710, lines 64 – 67, respectively, Kawamura; Fig. 2, items 96, 88, and 74a, Col. 4, lines 26 – 27, Mosher); and means for recording information identifying the second set of backup volumes in the recovery control dataset (Fig. 21, item 2710, col. 14, lines 67, Kawamura; Fig. 2, items 96, 88, and 70, Col. 4, lines 25 – 26, Mosher) and in the external file system's control dataset (Fig. 2, item 16 and 37, Col. 5, lines 64 – 67, Kawamura).

Regarding Claim 12, Kawamura/Mosher discloses a database management system further comprising means for restoring data from the first set of backup volumes to the first set of storage volumes (Fig 14, item 409, lines 10 – 12, Kawamura; Col. 3, lines 64 – 67, Mosher) and for performing a point-in-time recovery using a user specified point-in-time (Col. 4, lines 14 – 16, Mosher[5]), and the logs on the second set

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[5] Mosher discloses that the system will receive user requests for storing and restoring. In addition Mosher teaches a system comprising with a Timestamp feature (see Fig. 8, items 366, Col. 8, lines 19) added to the Extractor. The exactor is an entity that reads data to be stored and/or restored (see Fig 2, items 80, 82, 84, 86).

of storage volumes (Col. 8, lines 21 – 23, header to identify a particular SIT file,

Mosher).

Regarding Claim 15, Kawamura/Mosher discloses a database management

system further comprising means for storing checkpoint information periodically (Fig. 11,

Col. 8, lines 40 – 42, Mosher) and the means for backing up the data further comprises

means for recording a log apply starting point corresponding to a last checkpoint

information storage point (Col. 8, lines 43 – 46, Mosher).

Regarding Claim 16, Kawamura/Mosher discloses a database management

system further comprising means for obtaining the backup system lock (Col. 9, lines 33

– 34, Kawamura) before updating objects that change an external file system catalog

(Col. 9, lines 33 – 35, Kawamura[6]) or that extend across a storage volume boundary

(Col. 9, lines 52 – 56, Kawamura).

Regarding Claim 18, Kawamura/Mosher discloses a method further comprising

the step of backing up the data and wherein the step of backing up the data further

comprises obtaining the backup system lock (Fig. 14, item 408, Col. 11, lines 9 – 10,

Kawamura) and after obtaining the backup system lock, copying the first set of storage

volumes to a first set of backup volumes (Fig 14, item 409, lines 10 – 12, Kawamura).

Regarding Claim 19, Kawamura/Mosher discloses a method further wherein the

step of backing up the data further comprises the step of recording information

identifying the first set of backup volumes in a recovery control dataset (Col. 6, lines 34

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[6] Kawamura discloses that when the buffer is locked any input or output operation will be inhibited for the
external storages. This implies that the input or output operations are actions which can change an
external file system catalog.

– 38, the update related to the update is written in the LSN field, Kawamura) and in an

external file system's control dataset (Col. 5, lines 66 – 67, Kawamura).

Regarding Claim 20, Kawamura/Mosher discloses a method of operating the

database management system further comprising backing up log records, after backing

up the data, by copying the second set of storage volumes to a second set of backup

volumes (Fig. 2 and 21, items 16, and 37 and 2710, lines 64 – 67, respectively,

Kawamura; Fig. 2, items 96, 88, and 74a, Col. 4, lines 26 – 27, Mosher).

Regarding Claim 21, Kawamura/Mosher discloses a method of operating the .

database management system further comprising the steps of restoring data from the

first set of backup volumes to the first set of storage volumes (Fig 14, item 409, lines 10

– 12, Kawamura; Col. 3, lines 64 – 67, Mosher) and performing a point-in-time recovery

using a user specified point-in-time (Col. 4, lines 14 – 16, Mosher[7]), and the logs on the

second set of storage volumes (Col. 8, lines 21 – 23, header to identify a particular SIT

file, Mosher).

Regarding Claim 24, Kawamura/Mosher discloses a method of operating the

database management system further comprising storing checkpoint information

periodically (Fig. 11, Col. 8, lines 40 – 42, Mosher) and the step of backing up the data

further comprises recording a log apply starting point corresponding to a last checkpoint

information storage point (Col. 8, lines 43 – 46, Mosher).

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[7] Mosher discloses that the system will receive user requests for storing and restoring. In addition Mosher teaches a system comprising with a Timestamp feature (see Fig. 8, items 366, Col. 8, lines 19) added to the Extractor. The exactor is an entity that reads data to be stored and/or restored (see Fig 2, items 80, 82, 84, 86).

Regarding Claim 25, Kawamura/Mosher discloses a method of operating the

database management system wherein the step of continuing to update the data while a

backup system lock is taken further comprises obtaining the backup system lock (Col.

9, lines 33 – 34, Kawamura) before updating objects that change an external file system

catalog (Col. 9, lines 33 – 35, Kawamura[8]) or that extend across a storage volume

boundary (Col. 9, lines 52 – 56, Kawamura).

Regarding Claim 27, Kawamura/Mosher discloses an article of manufacture

wherein the method further comprises the step of backing up the data and wherein the

step of backing up the data further comprises obtaining the backup system lock (Fig. 14,

item 408, Col. 11, lines 9 – 10, Kawamura) and after obtaining the backup system lock,

copying the first set of storage volumes to a first set of backup volumes (Fig 14, item

409, lines 10 – 12, Kawamura).

Regarding Claim 28, Kawamura/Mosher discloses an article of manufacture

wherein the step of backing up the data further comprises the step of recording

information identifying the first set of backup volumes in a control dataset (Col. 6, lines

34 – 38, the update related to the update is written in the LSN field, Kawamura).

Regarding Claim 29, Kawamura/Mosher discloses an article of manufacture

wherein the method further comprises backing up log records, after backing up the data,

by copying the second set of storage volumes to a second set of backup volumes (Fig.

2 and 21, items 16, and 37 and 2710, lines 64 – 67, respectively, Kawamura; Fig. 2,

items 96, 88, and 74a, Col. 4, lines 26 – 27, Mosher).

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[8] Kawamura discloses that when the buffer is locked any input or output operation will be inhibited for the

Regarding Claim 30, Kawamura/Mosher discloses an article of manufacture of wherein the method further comprises recording information identifying the second set of backup volumes in the recovery control dataset (Fig. 21, item 2710, col. 14, lines 67, Kawamura; Fig. 2, items 96, 88, and 70, Col. 4, lines 25 – 26, Mosher) and in the external file system's control dataset (Fig. 2, item 16 and 37, Col. 5, lines 64 – 67, Kawamura).

Regarding Claim 31, Kawamura/Mosher discloses an article of manufacture of wherein the method further comprises the steps of restoring data from the first set of backup volumes to the first set of storage volumes (Fig 14, item 409, lines 10 – 12, Kawamura; Col. 3, lines 64 – 67, Mosher) and performing a point-in-time recovery using a user specified point-in-time (Col. 4, lines 14 – 16, Mosher[9]), and the logs on the second set of storage volumes (Col. 8, lines 21 – 23, header to identify a particular SIT file, Mosher).

Regarding Claim 13, 22, and 32, Kawamura/Mosher discloses an article of manufacture, wherein the step of performing a point-in-time recovery further comprises the steps of marking a first object as recovery-pending when a log record identifies the first object as having been updated without log records (Col. 10, lines 26 – 28 and 56 – 60, Mosher) so that subsequent restoration of the first object can be made from an image copy (Col. 10, lines 60 – 61, Mosher); processing log records identifying a

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external storages. This implies that the input or output operations are actions which can change an external file system catalog.

[9] Mosher discloses that the system will receive user requests for storing and restoring. In addition Mosher teaches a system comprising with a Timestamp feature (see Fig. 8, items 366, Col. 8, lines 19) added to the Extractor. The exactor is an entity that reads data to be stored and/or restored (see Fig 2, items 80, 82, 84, 86).

second object which has been newly created by allocating space for the second object

(Col 9 and 10, lines 1 – 3; respectively, Mosher); processing log records identifying a

third object which has been newly extended by allocating additional space for the third

object (Col. 13, lines 4 – 8, Mosher[10]) ; processing log records identifying a fourth object

which has been deleted by freeing space for the fourth object (Col. 9, lines 33 – 38,

Mosher) ; and setting a mode to indicate that the point-in-time recovery has completed

(Col 13, lines 23 – 27, TakeOver_Completed Flag is set, Mosher).

Regarding Claim 33, Kawamura/Mosher discloses an article of manufacture of

wherein the step of continuing to update the data while a backup system lock is taken

further comprises obtaining the backup system lock (Col. 9, lines 33 – 34, Kawamura)

before updating objects that change an external file system catalog (Col. 9, lines 33 –

35, Kawamura[11]) or that extend cross a storage volume boundary (Col. 9, lines 52 – 56,

Kawamura).

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[10] Mosher discloses that the object will be updated with additional information. This additional information
will have to extend the object.
[11] Kawamura discloses that when the buffer is locked any input or output operation will be inhibited for the
external storages. This implies that the input or output operations are actions which can change an
external file system catalog.

Prior art Made of Record

1.   Kawamura et al. (US Patent No. US 5,778,388) discloses a method of processing a synchronization point in a database management system to assure a database version using update logs from accumulated transactions.

2.   Mosher, Jr. et al. (US Patent No. US 6,785,696 B2) discloses a system and method for replication of distributed databases that span multiple primary nodes.

Points of Contact

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Giovanna Colan whose telephone number is (571) 272-

2752. The examiner can normally be reached on 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Giovanna Colan
Examiner
Art Unit 2162
December 8, 2005